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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/392,264	09/09/1999	TOSHIHARU MORI	018656-085	9910
21839	7590	11/06/2003	EXAMINER	
BURNS DOANE SWECKER & MATHIS L L P			PARKER, KENNETH	
POST OFFICE BOX 1404			ART UNIT	
ALEXANDRIA, VA 22313-1404			PAPER NUMBER	

2871

DATE MAILED: 11/06/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/392,264

Applicant(s)

MORI ET AL.

Examiner

Kenneth A Parker

Art Unit

2871

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 05 August 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-17 and 23-28 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-2, 4-5, 7-8, 10-15-17, 23-28 is/are rejected.
- 7) ☒ Claim(s) 3, 6, 9 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

***Claim Rejections - 35 USC § 103***

I. **Claims 1-2, 4-5, 7-8, 10-15-17, 23-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over IBM tech disclosure NN86045000 in view of Davis et al , US patent # 6,043,861, Domash 5937115, Kawano 627026, and Hallemeier 5889900.**

Claim 1 has

An optical filter device comprising:

an optical waveguide layer; and

a filter element including a liquid crystal layer disposed in a position which divides said optical waveguide layer in a waveguide direction, said liquid crystal layer having a twisted structure in which a helical pitch reflects light of a predetermined wavelength.

12. A optical filter device comprising:

a substrate;

an optical waveguide layer on a substrate into which is formed a groove;

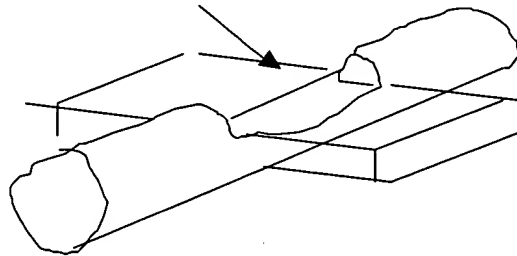
and

a filter element in said groove, wherein said filter element includes a liquid crystal layer disposed in a position which divides said optical waveguide layer in a waveguide direction, said liquid crystal layer having a twisted structure in which a helical pitch reflects light of a predetermined wavelength.

Lacking from the primary reference is the cholesteric liquid crystal being a polymer. Polymer liquid crystal were well known for improved stability over non-polymer liquid crystal, and would have been obvious to use for that reason. The secondary reference(s) provide evidence of this assertion. The listed optical elements were well known for providing their particular functions, and would have been obvious for that reason. The use of two LC layer of opposite handedness was well known for enabling both handednesses of light to be used, and would have been obvious for that reason. In

accordance with applicant's arguments that a slot is not shown, packing for integrated optical systems including slots for holding elements such as cholesteric filter was well known for enabling removable elements, and would have been obvious for that reason. Domash, Kawano and Hallemeier are cited as evidence of this assertion. These references also provide evidence that the use of quartz and diode was well known for high efficiency light sources, and obvious for that reason. Please note that the IBM tech disclosure shows only the portion on the block where the fiber is thinned to create a groove where the liquid crystal is placed. The fiber sticks out on both sides (this is absolutely clear from the discussion. As the whole fiber is the wave guiding layer, there is therefore a groove in the wave guiding layer.

Groove Portion is here



**II. Claims 1-2, 4-5, 7-8, 10-15-17, 23-28 are rejected under 35 U.S.C. 103(a) as being unpatentable Stotts, US patent #3,909113, in view of Hallemeier 5889900 Sugihara EP 0608566, Kyocera JP10104472, Kunikane et al, 5479547 , Furakawa**

**Electric JP0902912, and NT&T JP04069604 and Oki Electric JP 10246825 and Benzoni 5042889.**

Lacking from the primary reference is the clear disclosure of the cholesteric element dividing a waveguide in the waveguide direction. The use of a planar waveguide to support removable elements in the path of a light beam for fiber optic systems was notoriously well known. All of the secondary references are cited to show this. Specific motivations are shown in the Sugihara reference that indicates that the type of waveguide was conventional (page 2), and that their version offers the benefits of small coupling loss and crosstalk, high positional accuracy, excellent reproducibility and high reliability. The Kyocera reference indicates that the type of holder simplifies axis adjustment of the removable elements and reduces manufacturing costs (abstract).

Therefore it would have been obvious to one of ordinary skill to employ as slot type holder (planar substrate with a groove dividing the layer for insertion of the optical element) as was notoriously well known a method of holding an optical element for low manufacturing cost and simple adjustment, and to use the exact type taught by Sugihara for the benefits of small coupling loss and crosstalk, high positional accuracy, excellent reproducibility and high reliability.

Also lacking from the primary reference is the cholesteric liquid crystal being a polymer. Polymer liquid crystal were well known for improved stability over non-polymer liquid crystal, and would have been obvious to use for that reason. The secondary reference(s) provide evidence of this assertion. The listed optical elements were well known for providing their particular functions, and would have been obvious for that

reason. The use of two LC layer of opposite handedness was well known for enabling both handednesses of light to be used, and would have been obvious for that reason. In accordance with applicant's arguments that a slot is not shown.

***Any assertion that something is well known is a taking of official notice.***

***Note: Any assertions that an element, practice or relationship was conventional has the incorporated motivations of the benefits of having established supply chains, well understood behavior and manufacturing methodologies.***

### ***Response to Arguments***

Applicant's arguments filed have been fully considered but they are not persuasive. .

Applicant is arguing that the IBM reference does not disclose a groove, and that the cholesteric liquid crystal is in the cladding. Please note, the term "waveguiding layer" is broad, and must include the cladding portion as well as the central light guiding portion. The reason it must be read to include the cladding is clear from applicants language that there is a groove in the layer. As a groove must go only part way through the object, then the claimed groove must go part way through the layer, and the layer must include the lower cladding layer (or else the cut away portion is a cut away portion, not a groove). If the groove were taken as a cutout portion part way though the inner

waveguide portion, then applicant would be putting the cholesteric part way through the waveguide. Why one would do this is not clear, and an 112 rejection and 101 rejection would have to be made as how one would use a waveguide partially divided by the cholesteric is unclear. Therefore, since the term waveguide as used by applicant must include the cladding, the IBM reference does meet the claim language.

Regarding the Stotts reference, the reference has the claimed optical element, but in a different kind of holder. The claimed holder (groove through a waveguide) is shown to having been overwhelmingly well known, with numerous examples. As it appears that this type holder was the established way that optical elements were coupled into a waveguide path, and there are also numerous uses of cholesteric liquid crystals, for different function, the rejection can be read in the reverse, with the cholesteric liquid crystal replacing the optical modulators, polarizers or notch filters of the various secondary references.

Several of the references show transparent members where there is a cholesteric liquid crystal in the transparent member. As the transparent member can be used as a waveguide from any direction, the dividing of the waveguide must be met. Further, to clarify the structure, additional secondary references have been cited.

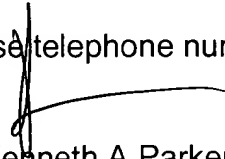
#### ***Allowable Subject Matter***

**Claims 3, 6 and 9 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kenneth A Parker whose telephone number is 703-305-6202. The examiner can normally be reached on 9:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert H. Kim can be reached on 305-3492. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 308-0956.



Kenneth A Parker  
Primary Examiner  
Art Unit 2871